

ENERGY RESOURCES CONSERVATION BOARD
Calgary Alberta

JAN 25 1978

IN THE MATTER OF 240 kV TRANSMISSION
LINE FACILITIES OF CALGARY POWER LTD.
IN THE RED DEER-CALGARY AREA

Decision Report 77-21
Application No. 770118

1 INTRODUCTION

1.1 The Application and Hearing

Calgary Power Ltd. applied under sections 9, 11, 13, and 14 of The Hydro and Electric Energy Act for permits to construct and licences to operate a 240 kV¹ single-circuit transmission line on double-circuit towers, to be designated as CP 925L, from the applicant's Red Deer substation CP 63S to a location 23.4 km north of Janet substation CP 74S.

A public hearing to consider the application was held by the Energy Resources Conservation Board on 13 July 1977, with V. Millard, Dr. N. Berkowitz, P.Eng., and V. Bohme, P.Eng. sitting.

1.2 Appearances

Table 1 lists the parties who appeared at the hearing and also identifies persons who made written submissions to the Board but did not appear at the hearing.

2. BACKGROUND TO THE APPLICATION AND DEFINITION OF THE ISSUES

2.1 Background to the Application

The present configuration of Calgary Power's 240 kV transmission system in the Red Deer-Calgary area is shown in Figure 1. Transmission line CP 901L was constructed on single-circuit towers in 1967, from Red Deer substation CP 63S to Janet substation CP 74S. The proposed line, CP 925L, would be strung on one side of double-circuit towers adjacent to CP 901L.

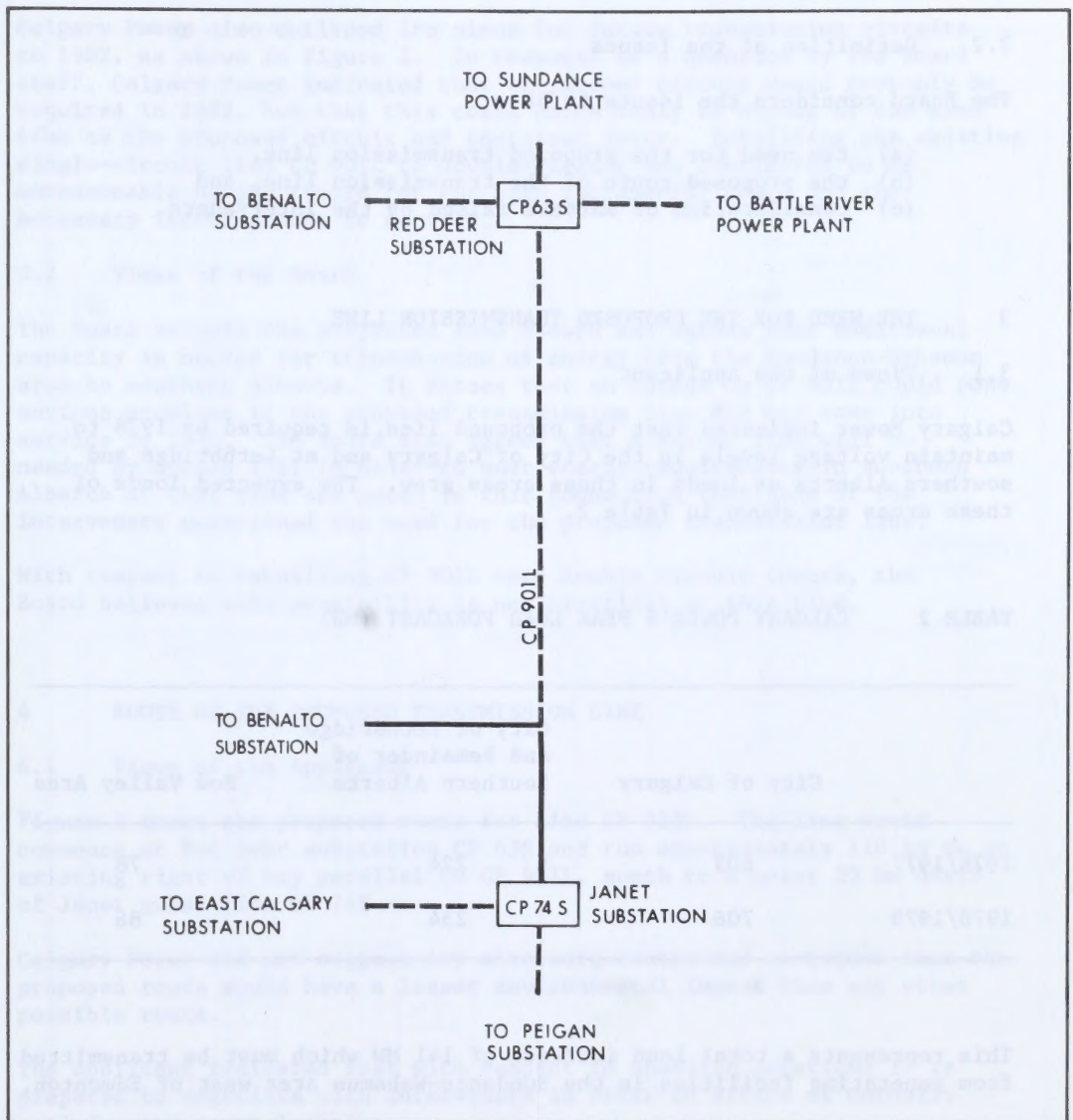
¹ kV is the symbol used in this report for kilovolts (thousands of volts).

TABLE 1 THOSE WHO APPEARED AT THE HEARING

Principals and Representatives (Abbreviation Used in Report)	Witnesses
Calgary Power Ltd. (Calgary Power)	
D. O. Sabey, Q.C. B. K. O'Ferrall	E. J. Macleod, P.Eng. R. E. Keyes, P.Eng. R. F. Bell, P.Eng. W. A. Hosie, P.Eng.
A Group of 35 Parties	J. Marshall
K. Sackett	K. Sackett
F. Radau	F. Radau
M. E. Latimer	M. E. Latimer
D. W. Bagrie	J. Marshall
Mrs. Osterman	Mrs. Osterman
Energy Resources Conservation Board (Board staff)	
N. A. Macleod, Q.C. R. L. Schroeder	

The following interveners made written submissions to the Board but did not appear at the hearing:

NAME	LOCATION
Bernard A. Hamill	SE $\frac{1}{4}$ 30-36-27-W4
L. D. Jones	W $\frac{1}{2}$ 10-26-28-W4



———— 240kV TRANSMISSION LINE ON DOUBLE CIRCUIT TOWERS

----- 240kV TRANSMISSION LINE ON SINGLE CIRCUIT TOWERS

FIGURE 1

DIAGRAM OF THE PRESENT CONFIGURATION OF 240kV
TRANSMISSION LINES IN THE RED DEER-CALGARY AREA

2.2 Definition of the Issues

The Board considers the issues to be:

- (a) the need for the proposed transmission line,
- (b) the proposed route of the transmission line, and
- (c) consideration of matters raised by the interveners.

3 THE NEED FOR THE PROPOSED TRANSMISSION LINE

3.1 Views of the Applicant

Calgary Power indicated that the proposed line is required by 1978 to maintain voltage levels in the City of Calgary and at Lethbridge and southern Alberta as loads in these areas grow. The expected loads of these areas are shown in Table 2.

TABLE 2 CALGARY POWER'S PEAK LOAD FORECAST (MW)

	City of Calgary	City of Lethbridge and Remainder of Southern Alberta	Bow Valley Area
1976/1977	603	224	78
1978/1979	706	254	86

This represents a total load increase of 141 MW which must be transmitted from generating facilities in the Sundance-Wabamun area west of Edmonton.

Calgary Power indicated further that the proposed line is needed to improve reliability and in particular to provide for uninterrupted service to southern Alberta in the event of an outage on one of the 240 kV circuits in the Benalto-Red Deer-Calgary area. A study of voltage conditions that might exist if an outage on CP 901L from Red Deer to Janet occurred, led Calgary Power to the conclusion that a high risk of serious power failures existed in the system.

Calgary Power also outlined its plans for future transmission circuits to 1982, as shown in Figure 2. In response to a question by the Board staff, Calgary Power indicated that the second circuit would probably be required in 1982, but that this could conceivably be strung at the same time as the proposed circuit and energized later. Rebuilding the existing single-circuit line CP 901L to double-circuit was considered to be unreasonable having regard for the high incremental costs and the necessary interruptions to service.

3.2 Views of the Board

The Board accepts the projected load growth and agrees that additional capacity is needed for transmission of energy from the Sundance-Wabamun area to southern Alberta. It agrees that an outage on CP 901L could pose serious problems if the proposed transmission line did not come into service by 1978. The Board also agrees that a second line will be needed by around 1982 in order to meet energy requirements in southern Alberta at that time and notes in this connection that none of the interveners questioned the need for the proposed transmission line.

With respect to rebuilding CP 901L onto double circuit towers, the Board believes this possibility is not practical at this time.

4 ROUTE OF THE PROPOSED TRANSMISSION LINE

4.1 Views of the Applicant

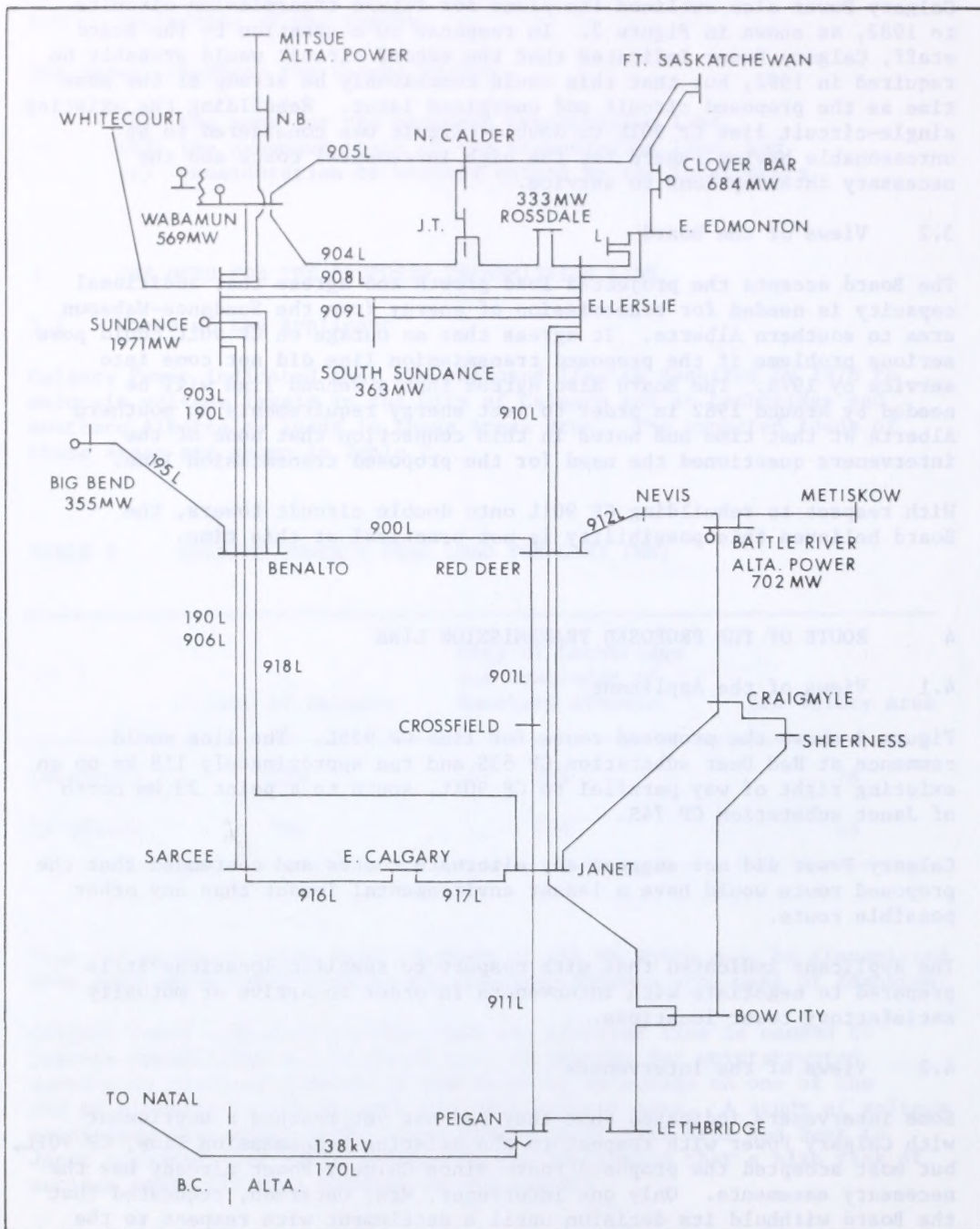
Figure 3 shows the proposed route for line CP 925L. The line would commence at Red Deer substation CP 63S and run approximately 118 km on an existing right of way parallel to CP 901L, south to a point 23 km north of Janet substation CP 74S.

Calgary Power did not suggest any alternate routes and contended that the proposed route would have a lesser environmental impact than any other possible route.

The applicant indicated that with respect to specific locations it is prepared to negotiate with interveners in order to arrive at mutually satisfactory tower locations.

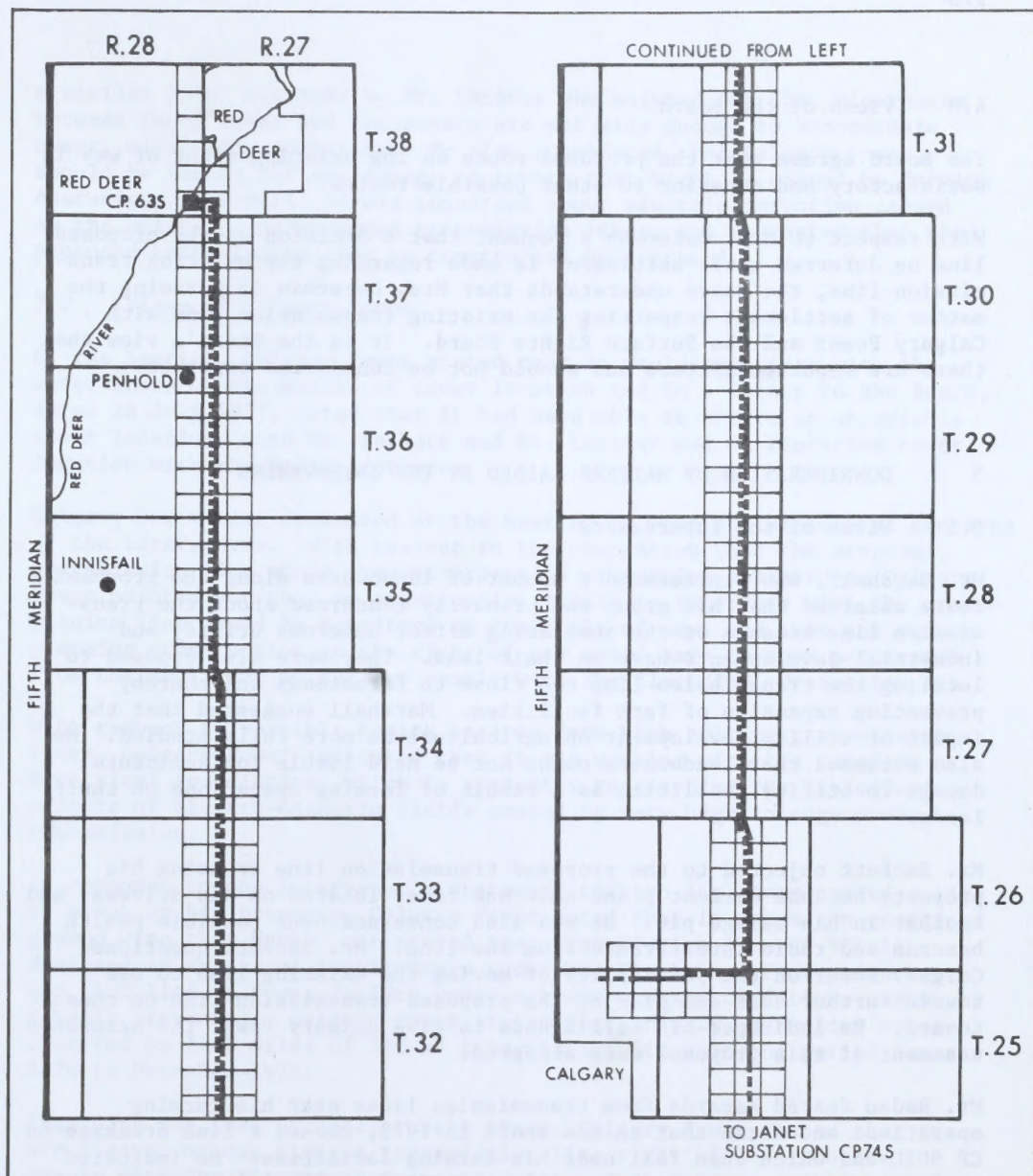
4.2 Views of the Intervenors

Some interveners indicated that they had not yet reached a settlement with Calgary Power with respect to the existing transmission line, CP 901L, but most accepted the proposed route since Calgary Power already has the necessary easements. Only one intervener, Mrs. Osterman, requested that the Board withhold its decision until a settlement with respect to the existing line is made. All interveners had specific concerns about the proposed line and these are dealt with in Section 5.



NOTE: ALL LINES SHOWN ARE 240kV EXCEPT WHERE NOTED

FIGURE 2 240kV TRANSMISSION SYSTEM TO 1982
AS PROJECTED BY CALGARY POWER LTD.



..... ROUTE OF PROPOSED 240kV TRANSMISSION LINE

— — — — — EXISTING CALGARY POWER LTD. TRANSMISSION LINE

FIGURE 3

DIAGRAM OF PROPOSED 240kV TRANSMISSION LINE

4.3 Views of the Board

The Board agrees that the proposed route on the existing right of way is satisfactory and superior to other possible routes.

With respect to Mrs. Osterman's request that a decision on the proposed line be deferred until settlement is made regarding the existing transmission line, the Board understands that Mrs. Osterman is pursuing the matter of settlement respecting the existing transmission line with Calgary Power and the Surface Rights Board. It is the Board's view that these are separate matters and should not be considered together.

5 CONSIDERATION OF MATTERS RAISED BY THE INTERVENERS

5.1 Views of the Interveners

Mr. Marshall, who represented a number of landowners along the proposed route observed that his group was primarily concerned about the transmission line because of the cumulating effect numerous utility and industrial developments have on their land. They were also opposed to locating the transmission line too close to farmsteads and thereby preventing expansion of farm facilities. Marshall suggested that the impact of utility development on agriculture be more fully studied. He also stressed that landowners ought not be held liable for accidental damage to utility facilities as a result of farming operations on their lands.

Mr. Sackett objected to the proposed transmission line crossing his property because current plans show one tower located on his driveway and another in his silage pit. He was also concerned over possible health hazards and radio interference from the line. Mr. Sackett questioned Calgary Power on the possibility of moving the existing line to new towers further east and placing the proposed transmission line on these towers. He indicated his willingness to give Calgary Power the necessary easement if this proposal were accepted.

Mr. Radau feared hazards from transmission lines near his farming operations and noted that an ice storm in 1973, caused a line breakage on CP 901L and which then fell near his farming facilities. He indicated that it was fortunate that no one was injured. He was also concerned about the possibility of hitting a tower with his farming equipment.

On behalf of W. W. Bagrie & Sons, Mr. Marshall stated an objection to the proposed transmission line on the grounds that it would be too close to existing farm buildings and restrict construction of new farm buildings. Mr. Marshall further noted that the size of modern farm machinery makes it virtually impossible to farm land between transmission towers.

A similar point was made by Mr. Latimer who pointed out that clearances between fence lines and the towers are not wide enough to accommodate newer, wider farm machinery. He also considered that Calgary Power should be liable for any damage to towers that might be caused by farming operations. As well, he was concerned about electric induction caused by the existing and proposed transmission lines, and suggested that the proposed transmission line be constructed underground.

5.2 Views of Calgary Power

At the hearing, Calgary Power stated that it would negotiate with the interveners on the matter of tower location and in a letter to the Board, dated 28 July 1977, noted that it had been able to arrive at acceptable tower locations with Mr. Sackett and Mr. Latimer and at tentative tower location with the Radau Brothers.

Calgary Power also commented at the hearing on some of the general concerns of the interveners. With respect to the contention that the proposed transmission line would prevent expansion of farming operations, Calgary Power pointed out that no construction likely to interfere with the transmission line would be permitted on the right of way, and that any person planning construction on the right of way would have to seek permission from the applicant as well as comply with The Electrical Protection Act.

With respect to possible health hazards from high voltage transmission lines, Calgary Power indicated that it was working with the Canadian Electrical Association, which is presently researching the biological effects of electro-magnetic fields caused by very high voltage power transmission.

In response to one intervener's statement that an ice storm caused a line to break on his property, Calgary Power noted that it was a non-energized ground wire that broke. It stated that transmission line CP 901 is designed in excess of requirements under The Electrical Protection Act, but that line or tower failure under extreme weather conditions cannot be totally prevented. Calgary Power stated that only 22 mechanical outages occurred on 1146 miles of 240 kV transmission lines in the period January 1970 to December 1976.

Regarding the loss of shelter belt trees, Calgary Power stated that trees are cleared or cut along a transmission line right of way in order to comply with The Electrical Protection Act and that it restricts clearing or cutting to the amount that is required.

As to the suggestion that the proposed line be built underground, Calgary Power stated that the cost of an underground line would be eighteen times that of an overhead installation and for the proposed line the cost would be unacceptable.

5.3 Views of the Board

The Board appreciates the concerns of the interveners respecting the inconvenience and potential hazard associated with an electric transmission line. The Board recognizes that there is an element of risk associated with transmission lines but believes that experience has shown it to be very low. Additionally the Board is satisfied that the applicant's design meets all the prevailing standards.

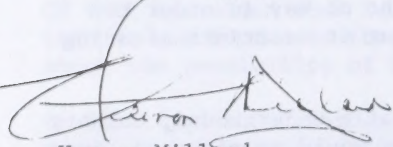
With respect to health hazard, the Board agrees with Calgary Power that the general consensus today is that the proposed facilities do not present a hazard. Studies currently underway are associated with much higher voltages than the proposed 240 kV line.

While in some areas, a transmission line may interfere with radio and television reception, the applicant is required to meet standards set by Communications Canada and where necessary remedial action to avoid excessive interference can be taken.

With respect to the proposed transmission line interfering with or preventing expansion of farming operations, the Board notes that Calgary Power has indicated its willingness to locate towers so as to minimize impact. However, it must be recognized that Calgary Power has obtained the right of way for the purpose of transmitting electric energy and this may, in some cases, impinge on farm expansion in that specific area. Any person considering expansion of a facility onto the right of way is obliged to contact Calgary Power and the Electrical Protection Branch and obtain prior permission.

The Board has considered the suggestion made by Mr. Marshall that the government conduct a study of the impact of utility development on agriculture. This matter, although beyond the Board's immediate jurisdiction, is of concern to it and the Board will forward the suggestion along with its views to the appropriate ministers in the government. Similarly the Board has considered the suggestions that the farmer be relieved of responsibility in the event that farming operations damage a transmission tower. Again this is a matter beyond the Board's jurisdiction but the suggestion will be forwarded to the appropriate minister.

DATED at Calgary, Alberta on December 21, 1977.



Vernon Millard
Vice Chairman

